

IN THE CLAIMS

Please amend the claims as follows:

Claim 1 (Currently Amended): A method for detecting an object [(1)] in a zone [(2)] situated in the proximity of an interface [(3)] between two liquid and/or gaseous media, ~~especially an interface of the water/air type~~; the said object [(1)] being illuminated by electromagnetic radiation [(4)] comprising at least two different wavelengths, ~~especially situated in regions corresponding to the near infrared on the one hand and to blue-green on the other hand~~; the said media having different absorption coefficients as a function of the wavelengths of the electromagnetic radiation [(4)]; the said method comprising ~~the following stages:~~

[[- (a)]]~~the stage of~~ choosing, from among the wavelengths of the electromagnetic radiation [(4)], at least two wavelengths or two wavelength regions,

[[- (b)]]~~the stage of~~ creating, for each of the said wavelengths or wavelength regions, an image [(5)] of the said interface [(3)] and of the said zone [(2)],

[[- (c)]]~~the stage of~~ producing electrical signals [(6)] representative of each image [(5)],

[[- (d)]]~~the stage of~~ digitizing the electrical signals ~~(6) in such a way as to~~ produce data [(7)] corresponding to each image [(5)],

[[- (e)]]~~the stage of~~ extracting, from the said data [(7)] corresponding to each image [(5)], two groups of data [(7)], wherein the groups are representative of at least part of the said object [(1)] in the near infrared region and in the blue-green region respectively,
and

[[- (f)]]~~the stage of~~ comparing the said groups of data [(7)];

the producing, the digitizing, the extracting, and the comparing stages (e) to (f) being referred to hereinafter as the process of deducing the presence of an object [(1)];

~~such that it is possible thereby to detect~~ whereby detecting the presence of an object ~~[[(1)]]~~ and/or ~~to determine~~ determining the position of the detected object ~~[[(1)]]~~ relative to the said interface ~~[[(3)]]~~, while discriminating between an object ~~[[(1)]]~~ situated entirely under the interface ~~[[(3)]]~~ and an object ~~[[(1)]]~~ situated at least partly above the interface ~~[[(3)]]~~.

Claim 2 (Currently Amended): ~~[[A]]~~ The method according to claim 1; ~~the said method~~ additionally comprising:

~~[[-]] the stage of~~ integrating over time the results of the stage of comparison of the said groups of data ~~[[(7)]]~~.

Claim 3 (Currently Amended): ~~[[A]]~~ The method according to claim 2; ~~the said method~~ additionally comprising:

~~[[-]] the stage of~~ tripping an alarm ~~[[(8)]]~~ if an object ~~[[(1)]]~~ of human size is detected under the said interface ~~[[(3)]]~~ for a time longer than a specified threshold.

Claim 4 (Currently Amended): ~~[[A]]~~ The method according to ~~any one of claims 1 to 3~~ claim 1, [[;]] ~~the said method being such that~~ wherein calottes (9) ~~(within the meaning of the present invention)~~ are generated in order to extract, from the said data ~~[[(7)]]~~ corresponding to each image ~~[[(5)]]~~, two groups of data ~~[[(7)]]~~, and wherein the groups are representative of at least part of the said object ~~[[(1)]]~~ in the near infrared region and in the blue-green region respectively.

Claim 5 (Currently Amended): ~~[[A]]~~ The method according to claim 4 ~~[[;]]~~, ~~the said method~~ additionally comprising ~~the following stages~~:

~~[[-]]the stage of associating characteristics (10) (within the meaning of the present invention)~~ with each calotte[[(9)], and

~~[[-]]the stage of deducing the presence of a group of data[[(7)], wherein the group is representative of at least part of the said object [[(1)]]if the characteristics [[(10)]]exceed a predetermined threshold[[SC]].~~

Claim 6 (Currently Amended): [[A]] The method according to ~~any one of claims 1 to 5 claim 1,; the said method being such that~~ wherein, in order to compare the said groups of data[[(7)], a search is performed for data [[(7)]]representative of at least part of the said object [[(1)]]in the blue-green region, for which data, within a specified geometric vicinity[[(11)], there are no corresponding data [[(7)]]representative of at least part of the said object [[(1)]]in the near infrared region[[;]],

~~such that it can be concluded~~ whereby concluding from a positive search that the said object [[(1)]]is situated under the interface[[(3)]].

Claim 7 (Currently Amended): [[A]] The method according to ~~any one of claims 1 to 5 claim 1,; the said method being such that~~ wherein, in order to compare the said groups of data[[(7)], a search is performed for data [[(7)]]representative of at least part of the said object [[(1)]]in the blue-green region, for which data, within a specified geometric vicinity[[(11)], there are corresponding data [[(7)]]representative of at least part of the said object [[(1)]]in the near infrared region[[;]],

~~such that it can be concluded~~ whereby concluding from a positive search that the said object [[(1)]]is situated at least partly above the interface[[(3)]].

Claim 8 (Currently Amended): [[A]] ~~The~~ method according to claim 2, ~~in combination with any one of claims 1 to 7;~~ more particularly intended to discriminate between a stationary object [[(1)]] and a moving object [[(1)]]; to integrate over time the results of the stage of comparison of the said groups of data [[(7)]], the said method additionally comprising ~~the following stages:~~

[[-]] ~~the stage of~~ iterating, at specified time intervals, the said process of deducing the presence of the said object [[(1)]];

[[-]] ~~the stage of~~ calculating the number of times that the said object [[(1)]] is detected during a specified time period [[T1]]; and

[[-]] ~~the stage of~~ discriminating, at one point of the said zone [[(2)]], between the said objects [[(1)]] that are present a number of times greater than a specified threshold [[S1]](the said objects [[(1)]] being referred to hereinafter as stationary objects [[(1)]]) and the said objects [[(1)]] that are present a number of times smaller than the said specified threshold [[S1]](the said objects [[(1)]] being referred to hereinafter as moving objects [[(1)]][;]),

~~such that it is possible thereby to detect~~ whereby detecting the presence of a stationary object [[(1)]] situated entirely under the interface [[(3)]] and thus ~~to trip~~ tripping an alarm [[(8)]].

[[System]]

Claim 9 (Currently Amended): A system for detecting an object [[(1)]] in a zone [[(2)]] situated in the proximity of an interface [[(3)]] between two liquid media [[(12)]] and/or gaseous media [[(13)]], ~~especially an interface of the water/air type;~~ the said object [[(1)]] being illuminated by electromagnetic radiation [[(4)]] comprising at least two different wavelengths, ~~especially situated in regions corresponding to the near infrared on the one hand and to blue-green on the other hand;~~ the said media having different absorption coefficients

as a function of the wavelengths of the electromagnetic radiation[[(4)]]; the said system comprising:

[[- (a)]]selecting means [[(14)]]for choosing, from among the wavelengths of the electromagnetic radiation[[(4)]], at least two wavelengths or two wavelength regions,

[[- (b)]]filming means [[(15)]]for creating, for each of the said wavelengths or wavelength regions, an image [[(5)]]of the said interface [[(3)]]and of the said zone[[(2)],

[[- (c)]]converting means [[(16)]]for producing electrical signals [[(6)]]
]]representative of each image[[(5)],

[[- (d)]]digitizing means [[(17)]]for digitizing the electrical signals [[(6)]]in such a way as to produce data [[(7)]]corresponding to each image[[(5)],

[[- (e)]]information-processing means [[(18)]]for extracting, from the said data [[(7)]]
]]corresponding to each image[[(5)], two groups of data[[(7)], wherein the groups are representative of at least part of the said object [[(1)]]in the near infrared region and in the blue-green region respectively, and

[[- (f)]]calculating means [[(19)]]for comparing the said groups of data[[(7)];
the converting means[[(16)], the digitizing means[[(17)], the information-
processing means [[(18)]]and the calculating means [[(19)]]being referred to hereinafter as the means for deducing the presence of an object[[(1)];],

~~such that it is possible thereby to detect~~ whereby detecting the presence of an object [[(1)]]and/or ~~to determine~~ determining the position of the detected object [[(1)]]relative to the said interface[[(3)], while discriminating between an object [[(1)]]situated under the interface [[(3)]]and an object [[(1)]]situated at least partly above the interface[[(3)].

Claim 10 (Currently Amended): [[A]] The system according to claim 9[;], ~~the said system~~ additionally comprising:

[[-]]integrating means [(20)]for integrating over time the results of the means [(19)]for calculating the said groups of data[(7)].

Claim 11 (Currently Amended): [[A]] The system according to claim 10[;], ~~the said system~~ additionally comprising:

[[-]]activating means [(21)]for activating an alarm [(8)]if an object [(1)]of human size is detected under the said interface [(3)]for a time longer than a specified threshold.

Claim 12 (Currently Amended): [[A]] The system according to ~~any one of claims 9 to 11~~ claim 11, ~~the said system being such that wherein~~ the said information-processing means [(18)]make it possible to generate calottes (9) ~~(within the meaning of the present invention)~~.

Claim 13 (Currently Amended): [[A]] The system according to claim 12, ~~the said system being such that wherein~~ the said information-processing means [(18)]make it possible:

[[-]]to associate characteristics (10) ~~(within the meaning of the present invention)~~ with each calotte[(9)], and

[[-]]to deduce the presence of a group of data[(7)], wherein the group is representative of at least part of the said object[(1)], if the characteristics [(10)]exceed a predetermined threshold[SC].

Claim 14 (Currently Amended): [[A]] The system according to ~~any one of claims 9 to 13~~ claim 11,[;] ~~the said system being such that wherein~~ the said calculating means [(19)

]]make it possible to search for data [(7)] representative of at least part of the said object [(1)] in the blue-green region, for which data, within a specified geometric vicinity [(11)], there are no corresponding data [(7)] representative of at least part of the said object [(1)] in the near infrared region;

~~such that it can be concluded~~ whereby concluding from a positive search that the said object [(1)] is situated under the interface [(3)].

Claim 15 (Currently Amended): [A] The system according to ~~any one of claims 9 to 13~~ claim 9, [;] ~~the said system being such that~~ wherein the said calculating means [(19)] make it possible to search for data [(7)] representative of at least part of the said object [(1)] in the blue-green region, for which data, within a specified geometric vicinity [(11)], there are corresponding data [(7)] representative of at least part of the said object [(1)] in the near infrared region;

~~such that it can be concluded~~ whereby concluding from a positive search that the said object [(1)] is situated at least partly above the interface [(3)].

Claim 16 (Currently Amended): [A] The system according to claim 10, ~~in combination with any one of claims 9 to 15~~; more particularly intended to discriminate between a stationary object [(1)] and a moving object [(1)]; the said integrating means [(20)] for integrating over time the results of the calculating means [(19)] making it possible:

[-] to iterate, at specified time intervals, the use of the said means for deducing the presence of the said object [(1)];

[-] to calculate the number of times that the said object [(1)] is detected during a specified time period [T1]; and

[[-]]to discriminate, at one point of the said zone[[(2)], between the said objects [[(1)]]that are present a number of times greater than a specified threshold[[S1]] (the said objects [[(1)]]being referred to hereinafter as stationary objects[[(1)]) and the said objects [[(1)]]that are present a number of times smaller than the said specified threshold[[S1]] (the said objects [[(1)]]being referred to hereinafter as moving objects[[(1)]]);

~~such that it is possible thereby to detect~~ whereby concluding the presence of a stationary object [[(1)]]situated entirely under the interface[[(3)];

~~such that it is possible thereby to trip~~ whereby tripping an alarm[[(8)].

Claim 17 (New): The method according to claim 1, wherein the interface is an interface of the water/air type.

Claim 18 (New): The method according to claim 1, wherein the two different wavelengths are situated in regions corresponding to near infrared or blue-green.

Claim 19 (New): The system according to claim 9, wherein the interface is an interface of the water/air type.

Claim 20 (New): The system according to claim 9, wherein the two different wavelengths are situated in regions corresponding to near infrared or blue-green.